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10/083,845	02/26/2002	Daniel Armstrong	ARM-1A	8192
20311	7590	02/10/2005	EXAMINER	
MUSERLIAN, LUCAS AND MERCANTI, LLP 475 PARK AVENUE SOUTH 15TH FLOOR NEW YORK, NY 10016			NOGUEROLA, ALEXANDER STEPHAN	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/083,845

Applicant(s)

ARMSTRONG, DANIEL

Examiner

ALEX NOGUEROLA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/29/2003
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-17, drawn to an electrophoresis method for separating and identifying microbes, classified in class 204, subclass 451.
  - II. Claims 18-21, drawn to a microfluidic device, classified in class 422, subclass 82.08.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and Group II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the microfluidic device of Group II can be used in a process that uses pressure or vacuum to transport the microbes/cells instead of an electric field. Also, the invention of Group I does not requires using a Mei light scattering apparatus or a laser induced fluorescence apparatus.

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3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Donald Lucas on February 02, 2005 a provisional election was made traverse to prosecute the invention of Group I, claims 1-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ebersole et al. (US 5,578,460) (“Ebersole”).

Addressing claim 1, Ebersole discloses a process for separating and identifying intact microbes while maintaining the microbes intact comprising:

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(a) obtaining sample comprising one or more intact microbes/cells from a substrate containing the microbes/cells (col. 21:5-36);

(b) introducing the sample into a passageway having a fluid therein (col. 6:24-27 and col. 22:39-40);

(c) separating the one or more microbes/cells the fluid by means of an electric field so as cause the one or more microbes/cells to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes/cells intact (col. 6:27-29; col. 22:47-50; col. 22:63-65); and

(d) analyzing the separated intact microbes/cells so as identify the microbes/cells (col. 6:35-47; col. 6:66 – col. 7:16; col. 22:32-38; and col. 23:2-11).

Addressing claims 2 and 3, for the limitations of these claims see Figures 5a-5c.

Addressing claim 4, for the limitation of this claim see col. 15:38-55

7. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Dürr et al. (US 5,723,031) (“Dürr”).

Addressing claim 1, Dürr discloses a process for separating and identifying intact microbes (see in Applicant’s specification page 9, first sentence of the fourth full paragraph: “Microbes such as bacteria, viruses and fungi ... [emphasis added]”) while maintaining the microbes intact comprising:

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(a) obtaining sample comprising one or more intact microbes/cells from a substrate containing the microbes (Table 1 in column 5);

(b) introducing the sample into a passageway having a fluid therein (col. 4:31-36 and Table 2 – Injection in column 5);

(c) separating the one or more microbes the fluid by means of an electric field so as cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (col. 4:39-40; col. 5:24-27); and

(d) analyzing the separated intact microbes so as identify the microbes (col. 4:40-50 and col. 5:35-41).

Addressing claims 2 and 3, for the limitations of these claims see col. 4:31-61.

Addressing claim 4, for the limitation of this claim see col. 4:40-53.

Addressing claim 5, “foot-and-mouth virus” is separated and analyzed. See Table 1 in column 5. Also see col. 2:52-55.

8. Claims 1-4 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Armstrong et al. (“Separating Microbes in the Manner of Molecules, 1. Capillary Electrokinetic Approaches,” Anal. Chem. 1999, 71, 5465-5469) (“Armstrong”).

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Addressing claim 1, Armstrong discloses a process for separating and identifying intact microbes while maintaining the microbes intact comprising:

(a) obtaining sample comprising one or more intact microbes/cells from a substrate containing the microbes (first and second full paragraphs in the first column on page 5466);

(b) introducing the sample into a passageway having a fluid therein (first full paragraph in the second column on page 5466 and first full paragraph in the first column on page 5467);

(c) separating the one or more microbes the fluid by means of an electric field so as cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (first full paragraph in the second column on page 5466 and first full paragraph in the first column on page 5467); and

(d) analyzing the separated intact microbes so as identify the microbes (Figures 3 and 5).

Addressing claims 2 and 3, for the limitations of these claims see the abstract and Figures 3 and 5.

Addressing claim 4, for the limitation of this claim see the first paragraph in the first column on page 5466 ("UV detector").

9. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by the Derwent abstract of Sabolovic et al. (FR 2468120 A) ("Sabolovic").

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Addressing claim 1, Sabolovic discloses a process for separating and identifying intact microbes while maintaining the microbes intact comprising:

(a) obtaining sample comprising one or more intact microbes/cells from a substrate containing the microbes (“The appts. allows the diagnosis of sickness in patients by measurement of the living cells in suspension in a vein.”);

(b) introducing the sample into a passageway having a fluid therein (“The liquid is introduced and evacuated by capillary tubes.”);

(c) separating the one or more microbes the fluid by means of an electric field so as cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (title “Electrophoretic mobility of particles in suspension measurer – has two electrodes on either side of transparent reading zone and two capillary tubes for evacuating test sample”); and

(d) analyzing the separated intact microbes so as identify the microbes (implied by “The output is received by opt-electronic assemblies to provide an electrical signal for processing. The processing is performed by spectral analysis and the results are applied to a plotter or to recording instruments for observation. The appts. allows the diagnosis of sickness in patients ...”).

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Addressing claims 2, 3, 7, and 8, for the limitations of these claims see the abstract (“the liquid is introduced and evacuated by capillary tubes, ...”).

Addressing claim 4, for the limitation of this claim see the abstract (“... the chamber is illuminated by a laser” and “The processing is performed by spectral analysis ...”).

Addressing claims 5 and 9, for the limitation of this claim see the abstract (“The appts. allows the diagnosis of sickness in patients by measurement of the living cells in suspension in a vein.”).

Addressing claim 6, Sabolovic discloses a process for diagnosing a disease caused by microbes comprising:

(a) obtaining sample comprising one or more intact microbes from an organism stricken with a disease caused by the microbes (“The appts. allows the diagnosis of sickness in patients by measurement of the living cells in suspension in a vein.”);

(b) introducing the sample into a passageway having a fluid therein (“The liquid is introduced and evacuated by capillary tubes.”);

(c) separating the one or more microbes the fluid by means of an electric field so as cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (title “Electrophoretic mobility of particles in suspension measurer – has two electrodes on either side of transparent reading zone and two capillary tubes for evacuating test sample”);

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(d) analyzing the separated intact microbes so as to identify the microbes

(implied by “The output is received by opt-electronic assemblies to provide an electrical signal for processing. The processing is performed by spectral analysis and the results are applied to a plotter or to recording instruments for observation. The appts. allows the diagnosis of sickness in patients ...”); and

(e) associating the microbe with a disease so as to diagnose the disease (implied by “The output is received by opt-electronic assemblies to provide an electrical signal for processing. The processing is performed by spectral analysis and the results are applied to a plotter or to recording instruments for observation. The appts. allows the diagnosis of sickness in patients ...”).

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeung et al. (US 5,006,210) ("Yeung").

Addressing claim 1, Yeung discloses a process for separating and identifying intact sample components while maintaining the sample components intact comprising:

- (a) obtaining sample (implied by col. 3:49-50 and col.6:60-61);
- (b) introducing the sample into a passageway having a fluid therein (col. 3:49-50 and col.6:60-61);
- (c) separating one or more sample components in the fluid by means of an electric field so as cause the one or more sample components to move in the fluid and to separate one from another and from other components in said sample (col. 3: 51-54 and col. 7:44-47; and
- (d) analyzing the separated sample components so as identify the sample components (col. 3:60-66 and col. 7:44-60).

Yeung does not disclose an example embodiment in which intact microbes/cells are separated and identified; however, it would have been obvious to one with ordinary skill in the art at the time the invention was made to also use Yeung's method for separating and identifying intact microbes/cells because Yeung states, "The procedure of the invention is thus useful in the genetics field, studying metabolism, and even having direct analysis of cells in vivo in clinical applications. Viruses and bacteria can be studied as well as other difficult to detect and analyze substances." See col. 6:15-20.

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Addressing claims 2 and 3, for the limitations of these claims see the abstract and the figure.

Addressing claim 4, for the limitation of this claim see the abstract and figure.

Addressing claim 5, Yeung does not specifically mention any of the substrates listed by Applicant; however, the list is so comprehensive that it covers any natural source of microbes/cells and many man-made sources and so significantly overlaps or is effectively as broad as the range of sources of microbes/cells contemplated by Yeung in his statement, “Viruses and bacteria can be studied [with his invention]...”(col. 6:15-19). Indeed the limiting of the substrate to soil or animal, for example, would not necessarily render Yeung unobvious with regard to this limitation.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ebersole et al. (US 5,578,460) (“Ebersole”) in view of the first page of “Streptococcus pyogenes” article downloaded from [www.textbookofbacteriology.net/streptococcus.html](http://www.textbookofbacteriology.net/streptococcus.html) (“Streptococcus pyogenes”) and “The Bacteria Antibiotics Can’t Kill” downloaded from [www.tigr.org/~btran/ENTEROCOCCUS.html](http://www.tigr.org/~btran/ENTEROCOCCUS.html) (“Enterococcus faecalis”).

Ebersole discloses a process for separating and identifying intact microbes while maintaining the microbes intact comprising:

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- (a) obtaining sample comprising one or more intact microbes/cells from a substrate containing the microbes/cells (col. 21:5-36);
- (b) introducing the sample into a passageway having a fluid therein (col. 6:24-27 and col. 22:39-40);
- (c) separating the one or more microbes/cells the fluid by means of an electric field so as cause the one or more microbes/cells to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes/cells intact (col. 6:27-29; col. 22:47-50; col. 22:63-65); and
- (d) analyzing the separated intact microbes/cells so as identify the microbes/cells (col. 6:35-47; col. 6:66 – col. 7:16; col. 22:32-38; and col. 23:2-11).

Ebersole does not mention an animal substrate; however, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use an animal substrate because Ebersole discloses the microbes streptococcus pyogenes and enterococcus faecalis, which cause infections in humans. See “streptococcus pyogenes” and “enterococcus faecalis”

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Armstrong et al. (“Separating Microbes in the Manner of Molecules, 1. Capillary Electrokinetic Approaches,” Anal. Chem. 1999, 71, 5465-5469) (“Armstrong”) in view of page 2 of the “TSCA Experimental Prelease application Approvd for Pseudomonas putida Strains (fact sheet)” downloaded from [www.epa.gov/docs/opptintr/biotech/4-5dec.htm](http://www.epa.gov/docs/opptintr/biotech/4-5dec.htm) (“TSCA”).

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Addressing claim 1, Armstrong discloses a process for separating and identifying intact microbes while maintaining the microbes intact comprising:

- (a) obtaining sample comprising one or more intact microbes/cells from a substrate containing the microbes (first and second full paragraphs in the first column on page 5466);
- (b) introducing the sample into a passageway having a fluid therein (first full paragraph in the second column on page 5466 and first full paragraph in the first column on page 5467);
- (c) separating the one or more microbes the fluid by means of an electric field so as cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (first full paragraph in the second column on page 5466 and first full paragraph in the first column on page 5467); and
- (d) analyzing the separated intact microbes so as identify the microbes (Figures 3 and 5).

Armstrong does not mention a soil substrate; however, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use a soil substrate because Armstrong discloses separating and identifying *pseudomonas putida* (Experimental Section – Materials on page 5466, which is naturally found in the soil (TSCA).

15. Claims 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dürr et al. (US 5,723,031) (“Dürr”).

Addressing claim 6, Dürr discloses a process for diagnosing disease caused by microbes (see in Applicant’s specification page 9, first sentence of the fourth full paragraph: “Microbes such as bacteria, viruses and fungi ... [emphasis added]”) comprising:

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(a) obtaining a sample comprising one or more intact microbes/cells from a substrate containing the microbes (Table 1 in column 5);

(b) introducing the sample into a passageway having a fluid therein (col. 4:31-36 and Table 2 – Injection in column 5);

(c) separating the one or more microbes the fluid by means of an electric field so as to cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (col. 4:39-40; col. 5:24-27); and

(d) analyzing the separated intact microbes so as identify the microbes (col. 4:40-50 and col. 5:35-41).

Dürr does not mention (i) obtaining the sample from an organism stricken with a disease caused by the microbes, and (ii) associating the microbe with a disease so as to diagnose the disease. As for obtaining the sample from an organism stricken with a disease caused by the microbes, although not mentioned by Dürr it would have been obvious to do so because Dürr states, ‘The viruses can be identified directly from any sample matrix, for example, from biological material (serum, urine, cells, plasma, cell supernatant, aqueous humour, saliva, et cetera) ...’ (col. 2:52-59) and exemplifies the invention by separating and identifying active foot-and-mouth virus (col. 6:21-61). As for associating the microbe with a disease so as to diagnose the disease it is clear that the just cited portions of Dürr that Dürr intended his invention to be used in real –world settings to, for example, identify from a bodily fluid whether an ill person has foot-and-mouth disease.

Addressing claims 7, 8, and 13, for the limitation of this claim see col. 4:31-61.

Addressing claims 9 and 12, Dürr states, 'The viruses can be identified directly from any sample matrix, for example, from biological material (serum, urine, cells, plasma, cell supernatant, aqueous humour, saliva, et cetera) or from non-biological formulations (water, medicaments, soil samples, et cetera) (col. 2:52-59) and exemplifies the invention by separating and identifying active foot-and-mouth virus (col. 6:21-61), which infects animals and people.

Addressing claim 10, Dürr discloses a process for determining the binding affinity (col. 10:36-38) of a drug/other substance with a microbe/cell (see in Applicant's specification page 9, first sentence of the fourth full paragraph: "Microbes such as bacteria, viruses and fungi ... [emphasis added]") comprising

(a) obtaining a sample comprising one or more intact microbes/cells from a substrate containing the microbes/cells (col. 2:52-59);

(b) combining the sample with a drug or other substance in a fluid media to form a suspension and to allow the microbe/cell to bind with the drug/other substance (col. 10:45-47 and col. 11:3-6);

(c) introducing the suspension into a passageway having a fluid therein (col. 10:46-49 and col. 11:6-7);

(d) subjecting the suspension to an electric field so as to cause the microbes/cells, and drug/other substance and bound microbes/cells-drug/other substance to move in the fluid and to

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separate from one another while maintaining the microbes/cells, the drug/other substance and the bound microbes/cells-drug/other substance intact (col. 10:45-57 and col. 11:6-21); and

(e) analyze the separated, intact bound microbes/cells-drug/other substance to determine their affinity for each other (col. 10:45-67; col. 11:16-19; and col. 12:16-21).

Addressing claim 11, for the limitation of this claim see col. 10:36-49 and col. 10:59-62.

Addressing claim 14, for the limitation of this claim see col. 4:31-61 and col. 10:59-62.

16. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCormick et al. (US 6,613,211 B1) ("McCormick").

Addressing claim 15, McCormick discloses a process for determining the viability of microbes/cells comprising

(a) obtaining a sample containing one or more intact microbes/cells from a substrate containing the microbes or cells (col. 12:38-40);

(b) dyeing the sample with a dye that causes viable microbes/cells to be distinguished from non-viable microbes/cells (col. 12:47-49 and col. 11:10-16); and

(c) introducing the dyed sample into a passageway having a fluid therein (col. 11:26-27);

(d) separating the one or more microbes/cells in the fluid by means of an electric field so as to cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (implied by col. 11:53-55 and col. 13:26-30, which discloses applying EOF (electrosmotive force) and voltage

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separate from one another while maintaining the microbes/cells, the drug/other substance and the bound microbes/cells-drug/other substance intact (col. 10:45-57 and col. 11:6-21); and

(e) analyze the separated, intact bound microbes/cells-drug/other substance to determine their affinity for each other (col. 10:45-67; col. 11:16-19; and col. 12:16-21).

Addressing claim 11, for the limitation of this claim see col. 10:36-49 and col. 10:59-62.

Addressing claim 14, for the limitation of this claim see col. 4:31-61 and col. 10:59-62.

16. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCormick et al. (US 6,613,211 B1) ("McCormick").

Addressing claim 15, McCormick discloses a process for determining the viability of microbes/cells comprising

(a) obtaining a sample containing one or more intact microbes/cells from a substrate containing the microbes or cells (col. 12:38-40);

(b) dyeing the sample with a dye that causes viable microbes/cells to be distinguished from non-viable micros/cells (col. 12:47-49 and col. 11:10-16); and

(c) introducing the dyed sample into a passageway having a fluid therein (col. 11:26-27);

(d) separating the one or more microbes/cells in the fluid by means of an electric field so as to cause the one or more microbes to move in the fluid and to separate one from another and from other components in said sample while maintaining the microbes intact (implied by col. 11:53-55 and col. 13:26-30, which discloses applying EOF (electros motive force) and voltage

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differentials to the channel. Note that although not stated, barring a contrary showing, separation will inherently occur among fluid components that have different electrophoretic motilities).

McCormick does not specifically mention analyzing the separated intact microbes/cells so as to identify viable microbes/cells from non-viable microbes/cells based on the dye. However, it would have been obvious to one with ordinary skill in the art at the time the invention was made to do so because McCormick teaches determining cellular response to toxic agents by using vital dyes to mark cells killed by the toxic agents. See col. 12:36-49.

Addressing claim 16, the channels are of capillary dimensions. See col. 13:1-14. As stated in the rejection of claim 15 electrophoretic separation will inherently occur among fluid components that different electrophoretic motilities due to the voltage applied across the channel.

Addressing claim 17, for the limitation of this claim see Figures 1-3 and col. 13:1-16.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alex Noguerola  
Primary Examiner  
AU 1753  
February 3, 2005